

'Mini Plant' Large Scale Three Phase Separator

Function:

The primary separation operation for crude oil occurs when the crude stream flows through a vessel of sufficient capacity to allow gravitational separation of the gas, liquid hydrocarbon and water phases. This process trainer blends air, water and refined oil to emulate a crude oil stream. This fluid mixture then flows into a horizontal separator vessel fabricated of clear PVC. Gas flow passes through a secondary vertical 2-phase separator, or knock-out pot to remove any further liquids from the gas stream. The separator is equipped with industry-typical process instrumentation. The entire trainer is controlled from a PLC/SCADA or DCS (distributed control system).

Process Highlights:

- Continuously variable flow of process fluids: air, water and oil
- Liquids are recycled, air is vented
- Time to reach steady state after a reasonable step change - less than 20 minutes

Equipment Specification Highlights:

- Clear Acrylic/PVC separator vessels and process piping where possible
- 2 off 760 x 2150 mm (30" dia. x 84") Acrylic horizontal separator vessels
- Electronic process measurement available in 4-20ma, 4-20mA with HART, Profibus PA or Foundation Fieldbus signals
 - o Level Measurement (choice of) - Bypass Chamber Magnetic, capacitance, ultrasonic, displacer and guided wave radar
 - o Pressure measurement
 - o Flow Measurement (choice of) - Vortex, Swirl, Averaging Pitot, DP Orifice, Magflow, Ultrasonic and Turbine meters
 - o High level (2 types) and pressure switches
- Centrifugal pump for water and gear pump for oil, both with variable speed drive
- On skid oil and water storage tanks
- Completely mounted on a steel structure/skid (3 parts for transport, approx.. 5m x 3m x 3m)
- Approximate dimensions of assembled process skid - 10m long x 3m wide x 5 m high. Dimensions may be adjusted based on room size and layout



Model Series: LS3PS

- Variable speed roots type air blower mounted on skid
- With ESD system and Flame scanner Fire and Gas System
- Available in all world voltages / frequencies (customer to specify electrical power available)

Controls Options:

- Industrial Standard PLC/SCADA or DCS
- Instruments by specific manufacturers on request

Instrument Air Option:

This trainer can be supplied with a dedicated air compressor/receiver/drier to provide the required instrument quality air on request.

